

REMARKS

Claims 2-11 are pending.

Claim 1 has been cancelled.

Claim 2 has been amended so as to further define the value of X1. Support for this amendment can be found in the X1 groups exemplified on page 58 of the specification. Also, claim 2 has been amended to further define (A1). Support for this amendment can be found on pages 22-23 of the specification.

No new matter has been added by way of the above-amendment.

II] INCORPORATION BY REFERENCE

Applicants' comments in the August 7, 2006 Amendment are herein incorporated by reference in their entirety.

III] ISSUES UNDER 35 USC 112

Claims 1-11 are rejected under 35 USC 112, second paragraph for allegedly being indefinite. Applicants respectfully traverse the rejection.

The Examiner has taken the position that the terms "polar" and "nonpolar" are indefinite. Applicants respectfully submit that the terms "polar" and "nonpolar" are well known in the art and Applicants have not used these terms in an inconsistent manner with the art recognized definitions.

The term "polar polymer" in claims 1-11 in the present invention is defined as a polymer which have a polar segment, and is obtained by homopolymerizing or copolymerizing various polar monomers. (See page 3, second paragraph in the description of the present invention).

Same or similar definition sometimes appeared already in the published articles and patent such as:

- 1) K. Matyjaszewski et al., *Journal of Macromolecular Science Part A - Pure and Applied Chemistry*, Vol. A39, No. 9, pp. 901-913 (2002);
- 2) T. Matsugi et al., *Journal of Polymer Science: Part A: Polymer Chemistry*, Vol. 41 3965-3973 (2003);
- 3) Y. Inoue et al., *ibid.*, Vol. 42. 496-504 (2004); and
- 4) WO 03/078317A (Applicant; Carbon Nanotechnology, Inc).

These references are attached hereto for the Examiner's review.

Also, the website http://en.wikipedia.org/wiki/Chemical_polarity#Polarity_of_molecules (August 7, 2006) defines "Polarity of molecules" as follows:

A compound is comprised of one or more chemical bonds between atoms. The polarity of each bond within the compound determines the *overall polarity* of the compound: how polar or non-polar it is. A polar molecule contains polar bonds - bonds which have unequal sharing of electrons between the two atoms involved in bonding. A non-polar compound contains non-polar bonds - bonds which have identical or similar sharing of electrons.

However, a compound's symmetry and net polarity must also be considered when determining the polarity of the overall molecule. Even if a compound contains only polar bonds, it may be non-polar overall as the direction of the polarities cancel each other out, giving the molecule a net polarity of zero. This occurs in boron trifluoride, which contains three identical polar bonds all cancelling each other out due to their symmetrical arrangement. Trigonal planar, tetrahedral and linear bonding arrangements often lead to symmetrical, non-polar molecules which contain polar bonds.

Accordingly, the terms "polar" and "nonpolar" are art-recognized and do not render the claims indefinite as alleged by the Examiner.

The Examiner also alleges that claim 7 is indefinite since the formulae V-VII in claim 7 is undefined. Applicants have reviewed claim 7 and are unclear why the Examiner makes this

rejection. Applicants note that the formulae V-VII reside in claim 5 and not 7. In any event, it appears that the formulae are properly defined.

Regarding the second point the Examiner raised in his rejection, we believe strongly that respective substituents of the formula V -VU in claim 5 (not in claim 7) are properly defined.

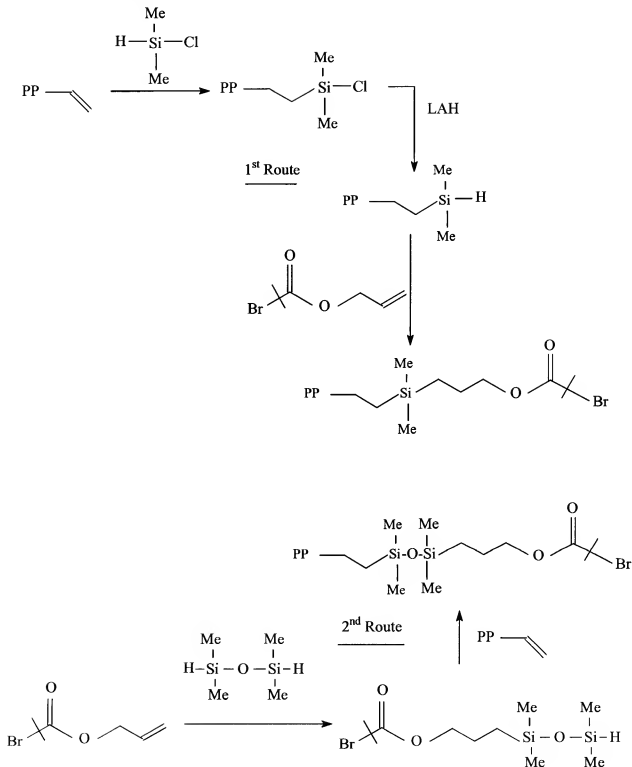
In view of the foregoing, Applicants respectfully submit that the claims, as currently amended, clearly point out and distinctly claim the subject matter of Applicants' invention, and as such, the requirements of 35 USC 112, second paragraph have been satisfied. Withdrawal of the rejection is respectfully requested.

IIII D1

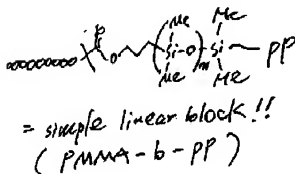
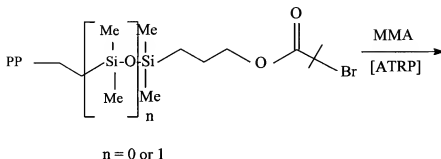
Claims 1-11 stand rejected under 35 USC 102(b) as being anticipated by Matylaszewski '473 (D1). Applicants note that there was an error in the description of the distinctions between the present invention and (D1) in Section [IVA] on pages 16-17 of the August 7, 2006 Amendment. The Examiner is respectfully requested to consider the following discussion as a replacement of Section [IVA] of the August 7, 2006 Amendment.

Based on the Examiner's comments in the outstanding Office Action, the Examiner appears to be relying upon claim 11 of D1 and paragraph 231.¹ In the paragraph 231 of D1, it is disclosed that "Two approaches were taken for the preparation of a propylene based macroinitiator for the ATRP copolymerization of a polypropylene macromonomer with MMA." (Wherein "ATRP" represents atom transfer radical polymerization.) However, the polymer thus produced should be only a linear block type, which is clearly discriminated from the essence of the present invention, namely a multi-branched polymer containing a block structure, a graft structure or a star-shaped structure. The Examiner's attention is directed to the reaction scheme written in D1, paragraph 231-257, which is as follows:

¹ The Examiner mentions paragraph 230 in the outstanding Office Action, but quotes from paragraph 231.



Then (A) is reacted with MMA in an ATRP reaction as follows:



First, this polymer is neither a block, graft or star shaped polymer as required by the instant claims.

Second, the Examiner will note that whether the 1st Route or the 2nd Route of D1 is performed, that the backbone of the final polymer must have a silicon atom incorporated therein.² This is in distinction to X¹ in the present invention which is a hydrocarbon linking group containing a group selected from an ester group, an amide group or an ether group.

Furthermore, the Examiner's attention is directed to claim 11 in D1 which describes a polyolefin as a macromonomer.

² The Examiner will note that Scheme 4 on page 9 of D1 has a typographical error, i.e., the final polymer should have a silicon atom in the polymer backbone.

Accordingly, significant patentable distinctions exist between the present invention and the teachings of D1 and withdrawal of the rejection is respectfully requested.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Garth M. Dahlen, Ph.D., Esq. (Reg. No. 43,575) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to our Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under § 1.17; particularly, extension of time fees.

Dated: August 24, 2006

Respectfully submitted,

By 

Marc S. Weiner. Registration No.: 32,181
Garth M. Dahlen, Ph.D., Registration No. 43,575
BIRCH, STEWART, KOLASCH & BIRCH, LLP
8110 Gatehouse Road
Suite 100 East
P.O. Box 747
Falls Church, Virginia 22040-0747
(703) 205-8000
Attorney for Applicant

Attachments: 1) K. Matyaszewski et al., *Journal of Macromolecular Science Part A - Pure and Applied Chemistry*, Vol. A39, No. 9, pp. 901-913 (2002);
2) T. Matsugi et al., *Journal of Polymer Science: Part A: Polymer Chemistry*, Vol. 41 3965-3973 (2003);
3) Y. Inoue et al., *ibid.*, Vol. 42. 496-504 (2004); and
4) WO 03/078317A (Applicant; Carbon Nanotechnology, Inc).